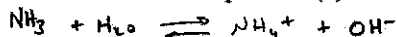
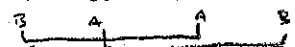


# Honors Chemistry - Acids and Bases Test

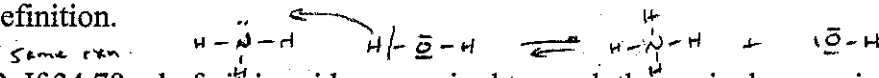
1. Ammonia is a base. Write equation(s) that show it acting as an Arrhenius base.



Write an equation that shows it acting as a Bronsted/Lowry base. Label the conjugate acids and bases in the reaction.



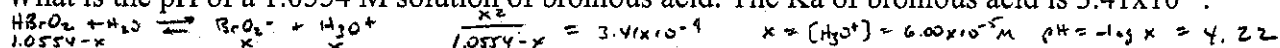
Write a reaction that shows it acting as a Lewis base. Draw the Dot structures that support this definition.



2. If 34.78 ml of nitric acid are required to reach the equivalence point with 50.00 ml of a 3.118 M solution of lithium hydroxide, what is the molarity of the acid?

$$M_a V_a = M_b V_b \quad (M_a)(.03478\text{L}) = (3.118\text{M})(.05000\text{L}) \quad M_a = 4.572\text{M}$$

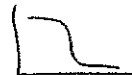
3. What is the pH of a 1.0554 M solution of bromous acid. The  $K_a$  of bromous acid is  $3.41 \times 10^{-9}$ .



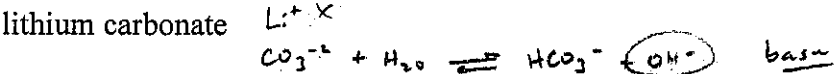
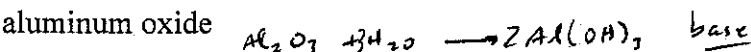
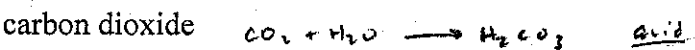
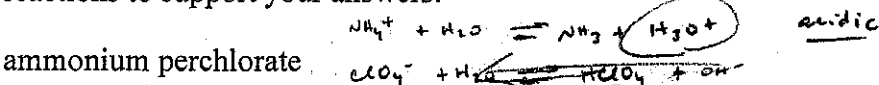
4. 30.00 ml of 1.002 M sodium hydroxide is titrated with 2.004 M hydrochloric acid. What will the pH be after additions of 0, 1.00, 15.00, and 27.400 ml of the acid?

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Draw the shape of the titration curve that you would get from this titration.

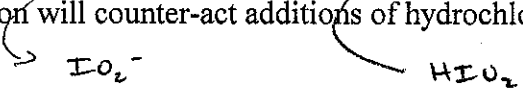


5. When each of the following are placed into water, will the solution be acidic, basic or neutral? Use reactions to support your answers:



6. What is acid rain and where does it come from? Write reactions that support your answer.

7. A buffer solution is made with iodite ions. What else is necessary to complete the buffer? Write reactions that show how this solution will counter-act additions of hydrochloric acid, and explain why the pH will not change.



no extra  $\text{H}_3\text{O}^+$   
so ... no  $\Delta$  in pH.

$V_a$	$V_{TOTAL}$ (mL)	$M_a V_a$	$M_b V_b$	
0	30	$(2.004M)(0)$ 0	$(1.002M)(.0300L)$ .03006	$-\log\left(\frac{.03006}{.0300}\right) = 8.68 \times 10^{-14}$ $pH = 14 - pOH = 14.00$
1	31	$(2.004)(.001)$ <del>.002004</del> 0	$.03006$ <del>-.002004</del> .02806	$-\log\left(\frac{.02806}{.031}\right) = .043$ $pH = 13.96$
15	45	$(2.004)(.015)$ <del>.03006</del>	<del>.03006</del>	7
27.4	57.4	$(2.004)(.0274)$ <del>.05491</del> .02485	<del>.03006</del> 0	$-\log\left(\frac{.02485}{.0574}\right) = .364 = pH$